E2M Ag-Energy Initiative of Western Massachusetts

Facilitating a coalition of for-profit and non-profit organizations to establish a sustainable local biofuel industry in the region

Organizing Coalition Partners:

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The Vision

Imagine a sunny July sky in Western Massachusetts. You are driving on the Mass Turnpike, somewhere between Springfield and the New York border. You climb a long hill and as you drive over the crest, your world explodes into a breathtaking bright yellow sea containing millions of blooming sunflowers filling the wide median strips and nearby open fields. Some of the flowers are even planted in artistic patterns comprised of waves and geometric patterns. You are not alone in your exhilaration. Thousand of others are traveling the Pike as a result of the new, growing, tourist industry created by these golden fields whose seeds will not only create next season's spectacular landscape, but will also provide millions of gallons of clean, renewable energy for use in the Commonwealth, as it moves to free itself from the use of imported fossil fuels.

The Organization

This is not a dream. It is already being established as the mission of a coalition of partners now gathered to implement this vision under the facilitation of the E2M Regional Economic Council of Western Massachusetts, a community development organization. The E2M Ag-Energy Initiative has facilitated the formation of this coalition which currently includes organizations already involved in agriculture, research, alternative energy production, transportation, and other disciplines critical to making this vision a reality.

Comprehensive Program

The E2M Ag-Energy Initiative is establishing a comprehensive renewable fuels program that with a broad goal that addresses the most important challenges facing the industry and the planet. In its mission to facilitate the production of cost effective, safe, alternative liquid and solid biofuels, the initiative understands that such a program must achieve the following:

1. Development of a long term sustainable energy system unaffected by the price and supply problems that will be experienced by fossil fuels as they reach the point of peak production.

2. Establish a system that connects local farmers, communities, and energy consumers as directly as possible to assure adequate and sustainable long term profits to family farmers.

3. Establish a system that returns profits directly to local communities for community economic development purposes and which provides income and land preservation opportunities to public and private owners of open spaces. It is desirable to avoid exporting profits to distant locations whenever possible.

4. Establish low tech production processes to enable entry into the biofuels industry by individual farmers and small businesses with minimal capital costs.

5. Produce non-food biofuels to avoid the current negative impacts on food prices.

6. Produce biofuels whose energy conversion efficiencies are high to keep the amount of process by-products as low as possible to minimize after-process disposal costs and market gluts.

7. Produce biofuels whose process by-products have useful applications such as high value and high nutrition livestock feed, fertilizer, and feedstock for other biofuel production processses.

8. Use low carbon-cycle biofuels as much as possible to avoid increases in atmospheric CO2 levels. All biofuels continually add atmospheric CO2 and increase global warming until they reach carbon neutrality. Grasses and plants have low carbon cycles and reach carbon neutrality in about ninety days while wood and trees take twenty years.

9. Reverse global warming through carbon sequestration by producing solid biofuels that can be cleanly combusted and which produce ag-char that can be used as a fertilizer, replacement for coal in power plants, and which remove carbon from the atmosphere and return it to the earth.

Current Partners

E2M.org: A group of local elected officials or their staff members, educators, economists, labor leaders, entrepreneurs, investors, and community members who have joined to form E2M. E2M is a sustainable economic infrastructure dedicated to achieving adequate profits and sustainable growth for the common good instead of maximum profits and maximum growth for the few as is true with the predominant economic system.

E2M Regional Economic Council of Western Massachusetts (E2M-REC): is a group of citizens chartered by E2M.org to create an E2M economic community in Western Massachusetts. This council is dedicated to the creation of citizen controlled community wealth to be used for the common good. In addition to sponsoring initiatives such as the Ag-Energy Coalition, the E2M-REC funds and earns income from local consumer products, holds equity in socially responsible local companies, will soon provide low interest loans and mortgages, and engages in other community building activities.

Franklin County Farm Bureau President Chuck Patenaude of Buckland, MA, and owner of **Hilltown Alternative Energy** is a pioneer in the use of biomass as a fuel for centralized energy generation. He now provides heat to his entire farm operation as well as to surrounding homes. He is a biochemist and as such has developed prototype thermo-deploymerization processes to convert sunflower, canola, cattle manure, and food waste into a biofuel.

Sunrise Oil, LLC is located in West Springfield, MA on a rail line less than 1000 yards from the main southern New England rail hub of CSX and other major rail transport providers. A Sunrise partner own the 260,000 square foot facility that is home to the company which is already purifying recycled kitchen oils sourced locally as well as imported from New York and surrounding states. Sunrise's oil purification facility is now being expanded to 10,000 square feet and a portion of its remaining 250,000 square feet will be available for the establishment of a seed crushing facility to produce virgin sunflower and canola oil, sunflower hulls for cattle feed, and canola meal for livestock feeds. This facility will also be available to local farmers to process any oilseed crops they may grow for their own purposes. Sunrise Oil has committed 5% of its corporate equity and profits to the E2M-REC.

Vegetable Energy Group/ LLC, d/b/a Vee-Go Energy, Easthampton, MA, is an alternative energy company that produces an advanced biomass pellet fuel made from the by-products of wheat flour production. Because Vee-Go Energy Pellets are made from food by-products, they do not compete with food production. They are made with raw materials produced locally within one hundred miles of Vee-Go's Easthampton, MA offices and are processed into pellets forty miles from Vee-Go's offices.by a grain cooperative owned by local family farmers. Vee-Go will market vegetable oils obtained from sunflowers and canola plants harvested in Massachusetts. Vee-Go has committed 10% of its corporate equity and profits to the E2M-REC.

Invited or to be Invited Partners

We have had initial conversations with the below groups. They have expressed interest in helping to move this initiative forward and we are moving ahead to formalize relationships with them:

University of Massachusetts Extension as the educational arm to help farmers and others develop the skills to grow sunflower and other biofuel crops. **Steve Herbert** is the University's agronomist and has expressed interest in working with any ag-energy group that develops.

Pioneer Valley Relocalization Project is a newly formed organization and is an affiliate of **the Massachusetts Relocalization Project**. These organizations are dedicated to developing the educational, community, and other resources necessary to prepare our commonwealth for whatever impacts may arise from global warming and the decline of fossil fuel production.

State Line Farm in North Bennington, Vermont now grows sunflowers, extracts the oils, and converts some of the oil to biodiesel to be used as fuel on the farm. State Line owner John Williamson also uses the sunflower husks left after oil extraction to feed his cattle. As a result he has considerably reduced his highest input costs of energy and grains.

University of Vermont's Vern Grubinger has been working in this field for several years and would be an asset in the local coalition.

Vegetable Oil as an Advanced Biofuel

Vegetable oil can be classified as an advanced fuel in many respects:

A. As a source of clean energy, vegetable oil can be used immediately after being extracted from plants without any further chemical processing. Ancients used it for lamps in this manner. When vegetable oil is used as a fuel, it does not add global warming CO2 to the atmosphere. It's emissions of particulate matter and volatile gases are from 50% to 90% less than fossil fuels. It contains less than 1.5 parts per million sulfur, far less than even ultra-low sulfur diesel fuels which contain 15 parts per million, and vegetable oil has far greater lubricity than low sulfur diesel fuels which rely on sulfur as a lubricant.

B. Although the use of vegetable oil as a fuel dates back centuries, it has been used more currently, as a fuel in diesel engines. The first person to do this was Rudolph Diesel, who invented the diesel engine in the late 19th century. With modern day concerns with the environment, many diesel car owners use this fuel including California Governor Arnold Schwartzenegger and North Carolina State Senator Stan Bingham.

C. Compared to methyl-ester biodiesel (B100), vegetable oil does not require the use of expensive, fossil based, highly toxic methanol and caustic lye in its production.

D. Unlike some other biofuels, vegetable oil is not explosive, can be pumped through pipelines, and is not hydroscopic. All hydroscopic substances absorb water vapor from the atmosphere and thus are deleterious in marine applications where fuels remain in tanks for long periods of time.

E. Unlike fossil fuels, biodiesel, ethanol, and all other fuels, vegetable oil is not a water hazard under the very strict German standards which categorize vegetable oil as a Class 0 fuel and classify biodiesel and other fuels in Class 1 along with acetone, phosphoric acids, toxic metal salts and other chemicals.

F. As an agricultural supporting fuel, vegetable oil is unsurpassed in that farmers can grow and crush oilseeds with investments under $3,000 to $5,000. This fuel does not require complicated processes, specialized facilities, or outside chemical sourcing. This is truly a fuel that can save farmes money as well as providing them new income streams to guarantee their profitability for decades to come.

Vegetable Oil as an economic force for community development

All for-profit members of the E2M Ag-Energy Coalition have dedicated a portion of their equity and profits to the E2M Regional Economnic Council of Western Massachusetts which has formed a new sustainable economic infrastructure based on the quest for adequate profits and sustainable growth for the common good. This infrastructure enables the Council to earn wealth to be used for community building purposes. These include the funding of new businesses who share their equity and profits with the community and employees, low interest loans and mortgages, entrepreneurial programs, and other social initiatives.

Submitted by Michael Garjian, CEO
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